

## INTERNATIONAL CITY MANAGERS' ASSOCIATION

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Route To:

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### DEVELOPING A POLICY FOR WATER MAIN EXTENSIONS

What are the essentials of a water main extension policy? What are the current practices in regulating water main extensions? How much should the city pay toward extension costs? What are the steps in developing a water main policy?

Need for Local Policy. Every city should have a definite policy governing the extension of water mains to assure fair treatment among present and future customers, to prevent ill-advised or excessive free extensions, to prevent an over-expansion of the distribution system beyond what the supply system can support, and to prevent the installation of inadequate and poorly constructed private water mains that may become the city's responsibility in later years. Unless such rules exist, a city water utility may overspend its accumulated reserves for main installations in anticipation of greater water revenues that may not be realized quite as soon as hoped for.

Acres of vacant improved land including water mains, hydrants, sewers, sidewalks, street lighting, and paved streets in some of the larger cities are testimony to the premature extension of costly public services. Water main extension policies can supplement land subdivision regulations by requiring a planning agency's approval of extensions into newly subdivided areas. Furthermore, such policies can control extensions into areas that were subdivided before the adoption of the platting regulations.

Essentials of a Water Main Extension Policy. What are the essential elements of a policy regulating the extension of water mains? Some general principles can serve as guides to city officials in the preparation of their own policy. The following is a check list of salient points to be covered by the municipal policy regulating the extension of water mains.

1. The policy should provide for customer or subdivider participation in the financing of the water main extension. Furthermore, the rule should set out in detail what the customer is to pay and the reason for the payment.
2. Subdividers of new land areas should install water mains large enough to supply future needs or to meet fire hazards, although municipal sharing of some of these additional costs would be justified. On the other hand, an individual customer ought to pay the costs only to the extent of meeting his needs.
3. Costs paid by the original applicant for a water main extension should be shared by property owners who later apply for water from the main.
4. The city should retain title to the mains. Furthermore, the customer should understand that the city has a right to add additional customers to the extension and to add new extensions without the consent of any party contributing to the original extension.

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5. The policy must protect the interests of the property owner and customer already being served by the water works as well as the interests of the prospective customer requesting service. The municipality must act as a trustee representing especially the interest of the general public.

6. The policy should conform with the annexation program and the long-range planning program and as a result require the approval of the planning agency for all extensions into proposed new subdivisions.

7. Water main extensions to industrial users may require a different set of rules than those governing extensions for residences. On the whole, industry should perhaps pay for its own extension, but no extension should be made until it is clear that the industrial requirements will not place excessive demand on the water supply.

8. It is questionable whether refunds should be paid to the customer or to the subdivider, particularly if in the older sections of the city the water mains were financed by a special assessment. Even if an advance deposit is obtained from a subdivider for all installation costs, refunds are not always advisable especially if the subdivider recoups the water main costs in the selling prices of his houses. If refunds must be made, then they should never exceed the installation cost nor run for more than a specified number of years.

9. Every extension of water mains under the policy should be covered by a contract between the city and the customer or the subdivider, specifying among other things what each party is to pay, the type of water main installation to be made, the duration of the payment period, the responsibilities of each party to the other.

10. The policy should strengthen the water works as a self-supporting utility and prevent any drain on its funds. The utility accounting system should assist local officials in supplying the facts on which the policies regulating water main extensions are to be based. The city and its water utility might establish a separate reserve fund to be used on a revolving basis for financing extensions; the city would be repaid through an investment charge over a period of years.

Summary of Current Practices. There is a great variety of policies governing the extension of water mains, but they may be classified according to the source of funds: payments by the property owners or the real estate developer, from the utility reserves, or from the city general fund. A particular extension policy may incorporate any one of these three sources or a combination of them. For example, the utility may pay part of the cost of the water main up to a specified number of feet, with the customer paying the cost of the remaining distance. Sometimes payments may be made from the city general funds if the water main is used to meet a substantial fire hazard.

Payments from property owners may be obtained through a special assessment against abutting property, or through a contractual agreement. Payments from the utility may be a cash outlay from accumulated reserves or proceeds from the sale of revenue bonds and be represented in the extension policy in several ways; for example, as free water mains up to a specified number of feet, or as a complete installation in anticipation of sufficient water revenues. Payments from the city general fund are usually direct appropriations either from tax revenues or from bond funds.



Policies calling for payments by the benefited property owner may also provide for reimbursement for all or part of the cost as the utility receives revenues from the water main. On the other hand, another type of policy may result in the utility's being reimbursed for its advances to finance construction. There can also be variations in the policies governing the extension of mains for individuals as against real estate subdividers, and also variations in the policies in financing extensions inside and outside the municipality. As a rule, the policies for extensions of mains for subdividers are more strict than those for individual householders ready to receive water service immediately. Also, as a rule, the city is more strict with outsiders in usually demanding an advance of the full cost of the extension than it is with its own residents who may pay only part of the cost. Water main extension policies generally apply to mains not over six inches in diameter, do not count the distances across intersections, streets, alleys, or other public ways in calculating the allowable free footage of extension, and often provide that refunds to property owners should not be made after seven or ten years.

Perhaps the simplest extension financing plan would be to charge the property owner or subdivider the entire cost of installation with no free extension for part of the distance or any refunds of their payments as water revenues are collected. A straight special assessment, or a payment contracted for, or private installation of the main according to the city's specifications provide in such cases a satisfactory means of financing. When free extensions of pipe are made for part of the distance, when refunds of the cost are allowed, and when the utility's or city's share of the cost depends on the estimated revenue or the estimated number of connections, then variations in the policy begin to occur. A policy may be simple or complex depending upon the arrangements needed to assure a fair sharing of the cost by the parties involved.

Among the more complex policies is one requiring an advance deposit by the individual householder or the subdivider. One city requires a \$1 deposit per linear foot of main plus \$25 per lot for the service connection. Refunds are made to the original depositor at the rate of \$50 for every new consumer attached to the main within the first five years. Another city requires the deposit of the full cost of installation with quarterly refunds equal to one-half of the water revenue received from the extension during the preceding three months. Refunds are made for ten years with the unrefunded balance becoming the property of the city.

Some cities extend a limited number of feet of water main at no charge, usually from 75 to 150 feet of main. For example, one municipality pays for extensions up to 100 feet plus all cross streets and alleys; thereafter the customer pays at the rate of 90 cents per foot of main with no refunds allowed. Sometimes free extensions are made if the expected water revenue equals a percentage of the installation cost. To illustrate: extensions of less than 100 feet would be made at no charge while extensions in excess of 100 feet would be made if the revenue is 12 or 15 per cent of the cost of the main, or provided the extension cost is not greater than four or five times the estimated revenue to be derived from the extension.

Or, on the other hand, a city might extend the main without requiring a deposit provided the property owner guarantees an annual return high enough to pay all costs, including a return on the plant investment. If water sales from the extension fall below the established return, then the consumer makes up the difference. Another variation occurs when the customer, in lieu of a guarantee of a



specified return, pays a surcharge of 10 or 12 per cent of the installation cost of the main in addition to the charge for the water consumed. Such surcharges continue until the annual revenues from the water main reach a percentage of the installation cost, or for a specified number of years, until the investment is paid for.

Extensions of water mains into vacant subdivisions often require substantial sums of money and at the same time involve a measure of risk as to whether an adequate return ever will be obtained. Consequently a city should have special rules for financing extensions into such areas, as distinguished from rules for extensions constructed for several householders ready to accept water service. Subdivision regulations should require the subdivider either to install the water mains, services, and hydrants, or to put up a bond guaranteeing to do so. Several cities require the subdivider to advance funds equal to the estimated construction cost, with the city then installing the water system although the approval of the planning agency would first be required. Refunds usually are paid to the subdivider who may receive a flat sum for each house connecting to the water main, a percentage of the water revenue realized, or part of the estimated annual water revenue as soon as houses are connected. One municipality refunds half of the revenue from the main until the installation costs are paid, another installs extensions free of charge if the subdivider erects a house on every other lot.

Additional comments might also be made about extensions outside of the city limits. Generally the rules governing extensions outside the city omit any refunds of the cost to the property owner or to the subdivider. Many cities refuse to extend the water mains outside their borders in order to encourage annexation of the suburbs to the city. A municipality may supply water to customers outside its limits but insist that they install their own mains and that such mains must meet the city's standards as to materials, size, and method of construction. The distinction made between residents and nonresidents is illustrated by the policy of one city that allows free extensions up to 100 feet for residents plus free footage across alleys and street intersections with longer extensions charged at the rate of 50 cents per foot. Nonresidents, on the other hand, must advance the entire installation cost and furthermore water rates are double those charged to residents. Sometimes extensions outside the city are limited to industrial users who must pay the entire installation cost. In one city, if the property is later annexed to the city, the city reimburses water main costs after deducting five per cent depreciation per year.

Estimating What the Property Owner and the City Should Pay. The water main policy should specify the role played by the city, its water utility, and the customer or subdivider in financing the extension. Most cities and their utilities share in the cost of extending water mains by some method or other. Whatever the method of sharing, the contribution of the municipality or its utility should be clearly set forth so that city officials will know the cost of the public contribution. As far as the customer is concerned, he may receive "free footage" of pipe but as far as the city is concerned, there is no "free" length of water main. The city must obtain sufficient revenue from its water main to pay all costs including a contribution to plant investment, or to permit building up of funds to enlarge the supply facilities without raising the water rates on the older customers.

A city may determine the limits of its sharing in water main extension in several ways: (1) set a top dollar limit on its outlay, (2) set a limit on



the number of feet of "free" pipe, (3) set a limit on the share of its cost in terms of the estimated yearly revenue from the extensions, or (4) set a limit in terms of what the property owner can guarantee as an annual return for the extension, or (5) set a limit in terms of value of the water main that is ready for service. In other words, in granting 100 feet free pipe to each customer, how much is the city actually contributing? Will the revenue not only eventually pay the pipe cost but also provide funds toward larger plant or supply facilities?

The Committee on Water Main Extension Policy of the American Water Works Association has suggested a method of determining how much a city can pay toward the "free" portion of a water main for each dollar of revenue. Under this method, the fixed charge ratio is calculated (the ratio of net operating revenue to total operating revenue) in order to obtain the proportion of total revenue available to pay for a return on the water plant investment. Second, the rate is capitalized at an average rate of interest on borrowed money to obtain the plant value that is supported by the average revenue per customer allocated to fixed charges. Then the ratio of the value of the distribution system to total plant value is multiplied into the plant value supported by the average revenue per customer to obtain the value of the distribution system so supported. (Journal of the American Water Works Association, August, 1949).

The Committee's suggested rule is explained in the following illustration: A water works might have a fixed charge ratio of 25 per cent. If the average annual revenue per customer is \$60 then \$15 (.25 times \$60) per customer would represent the return on the total water works investment. The \$15 investment return is capitalized at a going rate of interest, say 6 per cent, to obtain \$250 which represents the capital outlay the city can make in plant investment for every \$60 annual revenue per customer. But only part of the \$250 can be spent for distribution facilities that may comprise only 50 per cent of the total water works investment. Consequently, \$125 or half of \$250, represents the outlay the city can make in distribution facilities for each \$60 in revenue. Therefore, for each dollar of revenue the city might spend approximately \$2.09 in the distribution system. This calculation would tell the officials how much of a "free" extension the city can afford to make for each customer.

A variation of the Committee's proposal is a plan set forth by the New Jersey Public Service Commission. Again, the city's share of the installation cost is determined by the estimated revenue from the extension and rather than specify a number of feet of free pipe, the city might build the entire extension or only part, depending on the estimated revenue. For example, if the cost of the extension does not exceed three and one-half times the estimated revenue, the city would make the extension without charge; if the cost exceeds three and one-half times the revenue, the city would share costs up to that amount with the customer paying the balance. This rule was developed when a reasonable return on the water extension and other plant investment was considered to be not less than 7 per cent with an assumed operating ratio of 50 per cent. A return of 28 per cent on the cost of the pipe is equivalent to a 7 per cent return on the cost of the extension plus a payment to the supply and plant facilities. Finally, three and one-half times the annual revenue is approximately equal to 28 per cent of the cost of the pipe (Journal of the American Water Works Association, June, 1941). Some cities on the other hand, require the property owner to guarantee an annual return on the extension, for example, 28 per cent of the cost, and if the revenues do not match that guarantee, then the customer must make up the difference. Once each year the utility would therefore have to determine what its earnings were in relation to the cost of the pipe.

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A customer may prefer to pay his contribution to the plant investment apart from his water use charges and also make his payment in smaller amounts over the year. In one municipality the customer pays a quarterly investment charge of 1 1/4 per cent of his share of the construction cost in addition to the water bill. This charge is paid until the extension costs are met, but no payments are made after 20 years. A similar rule of the West Virginia Public Service Commission provides for a surcharge of 9 per cent per year on the customer's share of the construction cost.

How to Develop Local Policy. Each municipality should develop its own policy governing the extension of water mains. Some state public service commissions provide uniform rules for the extension of such mains, but a state agency can best provide a series of methods that city officials might adopt in combination, or with appropriate modifications to meet local circumstances. A water main extension policy should be tailored to meet the needs of each municipality. City officials who prepare such regulations should consider the following steps:

1. Study the practices of near-by cities in regulating water main extensions, not necessarily with the idea of adopting their procedures but to learn what the "neighbors" are doing since these cities are "competitors" to some extent. The residents will look to the practices of these cities to compare the bill they must pay locally.
2. Study the financing methods used in the past in the city because earlier practices may indicate desirable steps or warn of pitfalls to be avoided. If the new regulations depart from the older methods of financing and cannot be justified, then many complaints can be expected from the customers.
3. Forecast, as far as possible, the water main extensions that may be required in the next year, and in the next five years; also what types of customers (residential or commercial) will these extensions serve?
4. Estimate the extent to which the present supply and pumping facilities can serve additional customers, without impairment to the present plant and at what point additions must be made to keep supply and plant facilities on a par with consumer demand.
5. With respect to areas that will request extensions, review their ability to pay the full cost of water main extensions. Will these areas be paying for other expensive improvements at the same time? What type of residential development will take place in these areas? Is the tax payment record of the area good?
6. What should be the roles of the prospective customers or of the subdivider, the municipality acting through its water utility, and the municipality acting through general fund contributions. Should the city share part of the cost, or should it just ease the financing burden by permitting installment payments.
7. What distinction should be made, if any, in the regulations governing extensions to built-up properties and main extensions into new subdivisions. Also, what distinction should be made for extensions inside as against those made outside the municipality? The city may want to adjust the policies according to the risk involved, allowing more generous terms to individuals ready to make immediate use of water, and less generous terms to subdividers that are just opening up vacant land. Water main policies should be drafted with the long-range plans of the city in mind so that if the city wants to encourage annexation in the near future, the rules will help promote that end.